

IN THE CLAIMS:

1. **(Currently Amended)** A ~~receiver~~ method executed in a receiver that combines a decoder with an equalizer in a single module, comprising the steps of:  
said receiver receiving at time  $k$  a signal  $r(k)$ ;  
selecting ~~that~~ selects a trellis transition,  $s$ , corresponding to symbol  $s$  that  
 minimizes the metric

$$\xi_j(k) = \left| r(k) - \sum_{l=L_1+1}^{L_1} \tilde{h}_j(l) \tilde{s}(k-l) - \sum_{l=L_1+1}^{L_1+1} \tilde{h}_j(l) \hat{s}(k-l) \right|^2$$

where  ~~$r(k)$~~  is a signal received by said receiver at time  $k$ ,  $\tilde{h}_j(l)$  is related to both the transmission channel and to the encoding structure in ~~the~~ a transmitter,  $\tilde{s}(k)$  is a trial symbol specified by a selected trellis transition and  $\hat{s}(k)$  is a symbol that was previously decided; and

applying said symbol  $s$  to subsequent circuitry of said receiver.

2. **(Currently Added)** The method of claim 1 where the were said selecting of a trellis transition is chosen to improve performance of equalization.

3. **(Currently Added)** A receiver having a plurality of antennas comprising:  
 an equalizer responsive to signals received by said antennas from a transmitter via a transmission channel;

a mapper responsive to said equalizer; and

a decoder responsive to said mapper, where

said equalizer is responsive to both transmission parameter values of said transmission channel, and to multi-transmitting-antennas encoding schema within said transmitter.

4. **(Previously Added)** The receiver of claim 3 where said signal are developed in said transmitter by applying an outer coder to information signals, mapping results of said outer coder, and passing results of said mapping through a trellis encoder.